

Noise Element of the General Plan for the City of Half Moon Bay

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HALF MOON BAY NOISE ELEMENT

1.1 INTRODUCTION

1.1 OVERVIEW

1.1.1 Contents of Element

The Noise Element follows the recently revised State guidelines in the State Government code Section 653021(g) and Section 46050.1 of the Health and Safety Code. The element quantifies the community noise environment in terms of noise exposure contours for both near and long-term levels of growth and traffic activity. The information will become a guideline for the development of land use policies to achieve compatible land uses and provide baseline levels and noise source identification for local noise ordinance enforcement.

1.1.2 Key Issues

1. *Transportation Noise Control* - Within the City of Half Moon Bay are a number of transportation related noise sources including major arterials and collector roadways. These sources are the major contributors of noise in Half Moon Bay. Cost effective strategies to reduce their influence on the community noise environment are an essential part of the Noise Element.

2. *Community Noise Control for Non-Transportation Noise Sources* - Residential land uses and areas identified as noise sensitive must be protected from excessive noise from non-transportation sources including commercial and construction activities. These impacts are most effectively controlled through the adoption and application of a City Noise Ordinance.

3. *Noise and Land Use Planning Integration* - Information relative to the existing and future noise environment within Half Moon Bay should be integrated into future land use planning decisions. The Element presents the noise environment in order that the City may include noise impact considerations in development programs. Noise and land use compatibility guidelines are presented, as well as noise standards for new developments.

1.2 PURPOSE

The Noise Element of a General Plan is a comprehensive program for including noise control in the planning process. It is a tool for local planners to use in achieving and maintaining compatible land use with environmental noise levels. The Noise Element identifies noise sensitive land uses and noise sources, and defines areas of noise impact for the purpose of developing programs to ensure that Half Moon Bay residents will be protected from excessive noise intrusion.

1.3 AUTHORIZATION

The State of California has mandated that each county and city prepare a Noise Element as part of its General Plan. Section 65302(g) of the California Government Code requires specifically:

"(g) A Noise Element shall identify and appraise noise problems in the community. The noise element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:

Highways and freeways.

Primary arterials and major local streets.

Passenger and freight on-line railroad operations and ground rapid transit systems.

Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other

ground facilities and maintenance functions related to airport operation.

Local industrial plants, including, but not limited to, railroad classification yards.

Other ground stationary noise sources identified by local agencies as contributing to the community noise environment.

Noise contours shall be shown for all of the sources and stated in terms of community noise equivalent level (CNEL) or day-night average level (LDN). The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified in paragraphs (1) to (6), inclusive. The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise. The Noise Element shall

include implementation measures and possible solutions that address existing and foreseeable noise problems, if any. The adopted noise element shall serve as a guideline for compliance with the state's noise insulation standards."

The State Guidelines for Preparation and Content of Noise Elements of the General Plan indicates that the Noise Element should present the noise environment in terms of noise contours. For those areas identified as containing noise sensitive facilities, the noise environment is determined by monitoring.

2.0 EXISTING CONDITIONS/ISSUE ANALYSIS

2.1 DEFINITION OF NOISE

1. Noise Definitions. Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the Decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud; and 20 dBA higher four times as loud; and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud). Examples of various sound levels in different environments are shown in Exhibit 1.

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. These criteria are based on such known impacts of noise on people as hearing loss, speech interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts on people are briefly discussed in the following narratives:

HEARING LOSS is not a concern in community noise problems of this type. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments. Noise levels in neighborhoods, even in very noisy airport environs, are not sufficiently loud to cause hearing loss.

SOUND LEVELS AND LOUDNESS OF ILLUSTRATIVE NOISES IN INDOOR AND OUTDOOR ENVIRONMENTS
(A-*Scale Weighted Sound Levels*)

dB(A)	OVER-ALL LEVEL Sound Pressure Level Approx. 0.0002 Microbar	COMMUNITY (Outdoor)	HOME OR INDUSTRY	LOUDNESS Human Judgement of Different Sound Levels
130	UNCOMFORTABLY	Military Jet Aircraft Take-Off With After-burner From Aircraft Carrier @ 50 Ft. (130)	Oxygen Torch (121)	120 dB(A) 32 Times as Loud
120 110	LOUD	Turbo-Fan Aircraft @ Take Off Power @ 200 Ft. (90)	Riveting Machine (110) Rock-N-Roll Band (108-114)	110 dB(A) 16 Times as Loud
100	VERY	Jet Flyover @ 1000 Ft. (103) Boeing 707, DC-8 @ 6080 Ft. Before Landing (106) Bell J-2A Helicopter @ 100 Ft. (100)		100 dB(A) 8 Times as Loud
90	LOUD	Power Mower (96) Boeing 737, DC-9 @ 6080 Ft. Before Landing (97) Motorcycle @ 25 Ft. (90)	Newspaper Press (97)	90 dB(A) 4 Times as Loud
80		Car Wash @ 20 Ft. (89) Prop. Airplane Flyover @ 1000 Ft. (88) Diesel Truck, 40 MPH @ 50 Ft. (84) Diesel Train, 45 MPH @ 100 Ft. (83)	Food Blender (88) Milling Machine (85) Garbage Disposal (80)	80 dB(A) 2 Times as Loud
70	MODERATELY LOUD	High Urban Ambient Sound (80) Passenger Car, 65 MPH @ 25 Ft. (77) Freeway @ 50 Ft. From Pavement Edge, 10:00 AM (76 + or - 6)	Living Room Music (76) TV-Audio, Vacuum Cleaner	70 dB(A)
60		Air Conditioning Unit @ 100 Ft. (60)	Cash Register @ 10 Ft. (65-70) Electric Typewriter @ 10 Ft. (64) Dishwasher (Rinse) @ 10 Ft. (60) Conversation (60)	60 dB(A) 1/2 as Loud
50	QUIET	Large Transformers @ 100 Ft. (50)		50 dB(A) 1/4 as Loud
40		Bird Calls (44) Lower Limit Urban Ambient Sound (40)		40 dB(A) 1/8 as Loud
	JUST AUDIBLE	(dB(A) Scale Interrupted)		
10	THRESHOLD OF HEARING			

SOURCE: Reproduced from Melville C. Branch and R. Dale Beland, Outdoor Noise in the Metropolitan Environment,
Published by the City of Los Angeles, 1970, p.2.

SPEECH INTERFERENCE is one of the primary concerns in environmental noise problems. Normal conversational speech is in the range of 60 to 65 dBA and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level. Exhibit 2 shows the impact of noise and speech interference.

SLEEP INTERFERENCE is a major noise concern because sleep is the most noise sensitive human activity. Sleep disturbance studies have identified interior noise levels that have the potential to cause sleep disturbance. Note that sleep disturbance does not necessarily mean awakening from sleep, but can refer to altering the pattern and stages of sleep.

PHYSIOLOGICAL RESPONSES are those measurable effects of noise on people which are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are signs of harm.

ANNOYANCE is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability.

2.2.1 Standards

Community noise is generally not a steady state and varies with time. Under conditions of non-steady state noise, some type of statistical metric is necessary in order to quantify noise exposure over a long period of time. Several rating scales have been developed for describing the effects of noise on people. They are designed to account for the above known effects of noise on people.

Based on these effects, the observation has been made that the potential for noise to impact people is dependent on the total acoustical energy content of the noise. A number of noise scales have been developed to account for this observation. These scales are the: Equivalent Noise Level (LEQ), the Day Night Noise Level (LDN), and the Community Noise Equivalent Level (CNEL). These scales are described in the following paragraphs.

LEQ is the sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. LEQ is the "energy" average noise level during the time period of the sample. LEQ can be measured for any time period, but is typically measured for 15 minutes, 1 hour or 24-hours.

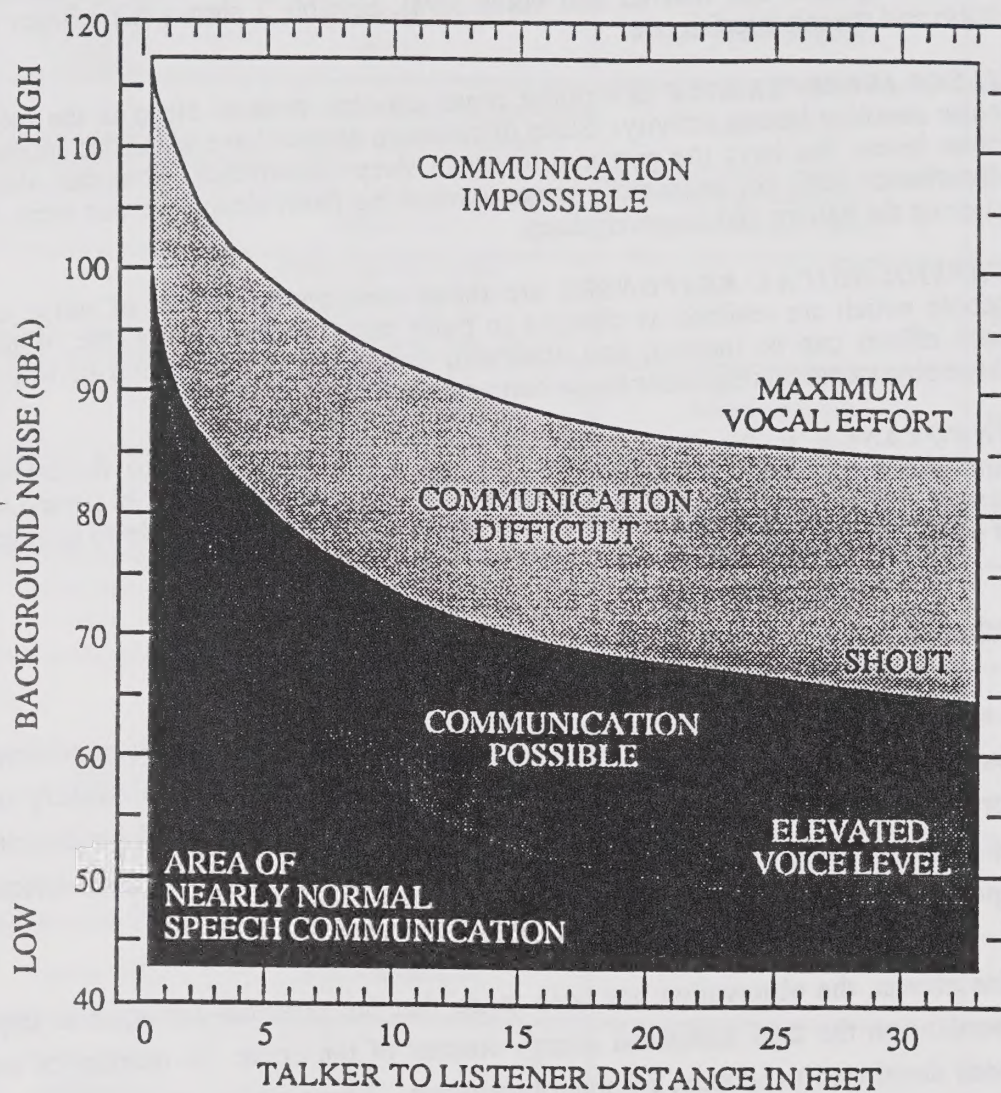


Exhibit 2

Effects of Noise on Speech Interference

LDN is a 24-hour, time-weighted annual average noise level. Time-weighted refers to the fact that noise which occurs during certain sensitive time periods is penalized for occurring at these times. In the LDN scale, those events that take place during the night (10 pm to 7 am) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of a day, where sleep is the most probable activity.

CNEL is similar to the LDN scale except that it includes an additional 5 dBA penalty for events that occur during the evening (7pm to 10pm) time period. Either LDN or CNEL may be used to identify community noise impacts within the Noise Element. Examples of CNEL noise levels are presented in Exhibit 3.

The public reaction to different noise levels varies from community to community. Extensive research has been conducted on human responses to exposure of different levels of noise. Exhibit 4 relates LDN noise levels (approximately equal to CNEL noise levels) to community response from some of these surveys. Community noise standards are derived from tradeoffs between community response surveys, such as this, and economic considerations for achieving these levels.

Intermittent or occasional noise such as those associated with stationary noise sources is not of sufficient volume to exceed community noise standards that are based on a time averaged scale such as the LDN scale. To account for intermittent noise, another method to characterize noise is the Percent Noise Level (L%). The Percent Noise Level is the level exceeded X% of the time during the measurement period. Examples of various noise environments in terms of the Percent Noise Levels are shown in Exhibit 5.

Noise Ordinances are typically specified in terms of the percent noise levels. Ordinances are designed to protect people from non-transportation related noise sources such as music, machinery and vehicular traffic on private property. Noise Ordinances do not apply to motor vehicle noise on public streets or other transportation related noise sources that are preempted by the State or Federal government.

Noise/Land Use Compatibility Guidelines. The purpose of this section is to present information regarding the compatibility of various land uses with environmental noise. It is from these guidelines and standards, that the City of Half Moon Bay Noise Criteria and Standards have been developed. Noise/Land use guidelines have been produced by a number of Federal and State agencies including the Federal Highway Administration, the Environmental Protection Agency, the Department of Housing and Urban Development, the

CNEL

Outdoor Location

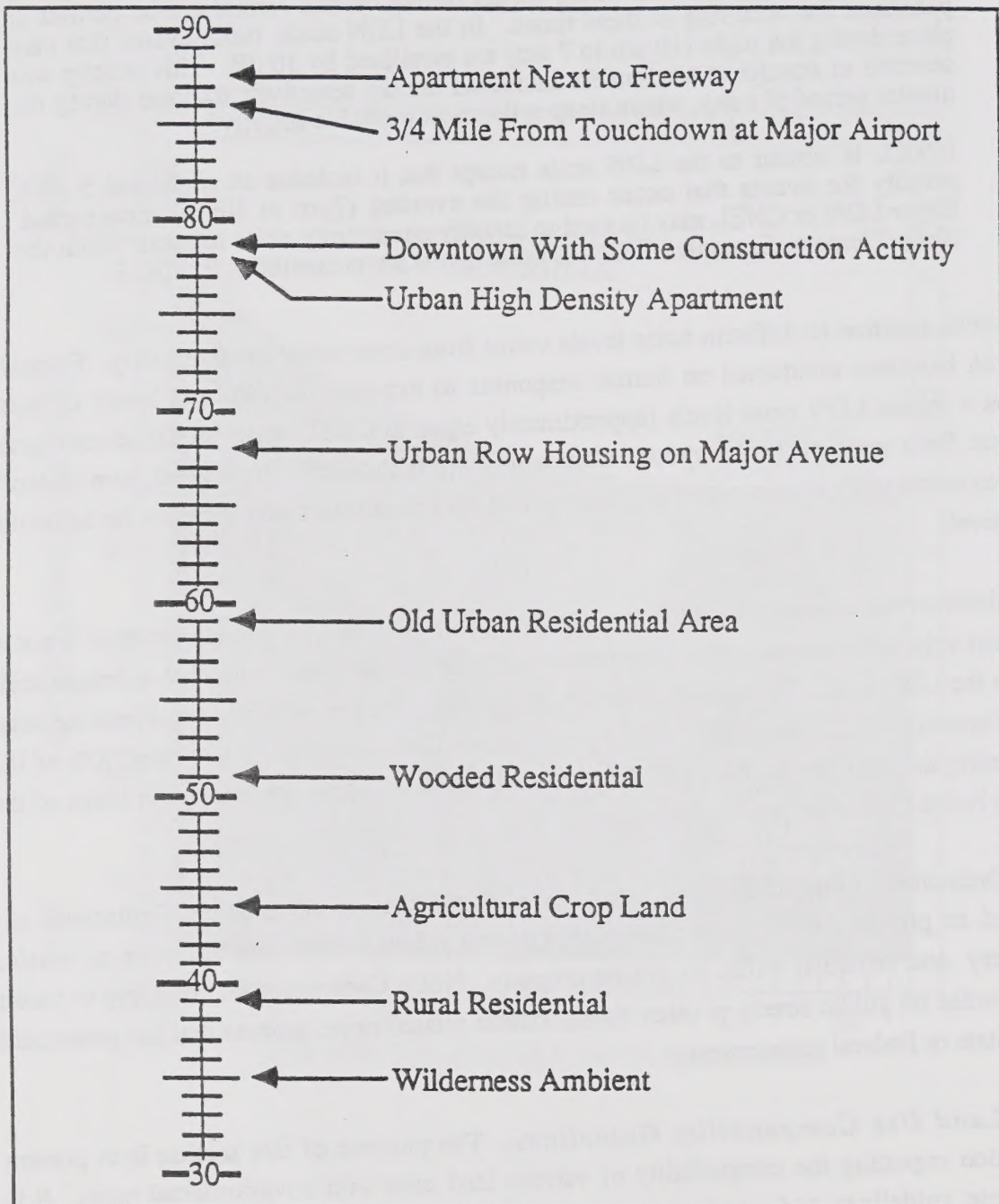


Exhibit 3

Typical Outdoor Noise Levels

COMMUNITY REACTION

VIGOROUS
COMMUNITY
ACTION

SEVERAL
THREATS
OF LEGAL
ACTION, OR
STRONG
APPEALS
TO LOCAL
OFFICIALS TO
STOP NOISE

WIDESPREAD
COMPLAINTS
OR SINGLE
THREAT OF
LEGAL ACTION

SPORADIC
COMPLAINTS

NO REACTION,
ALTHOUGH
NOISE IS
GENERALLY
NOTICEABLE

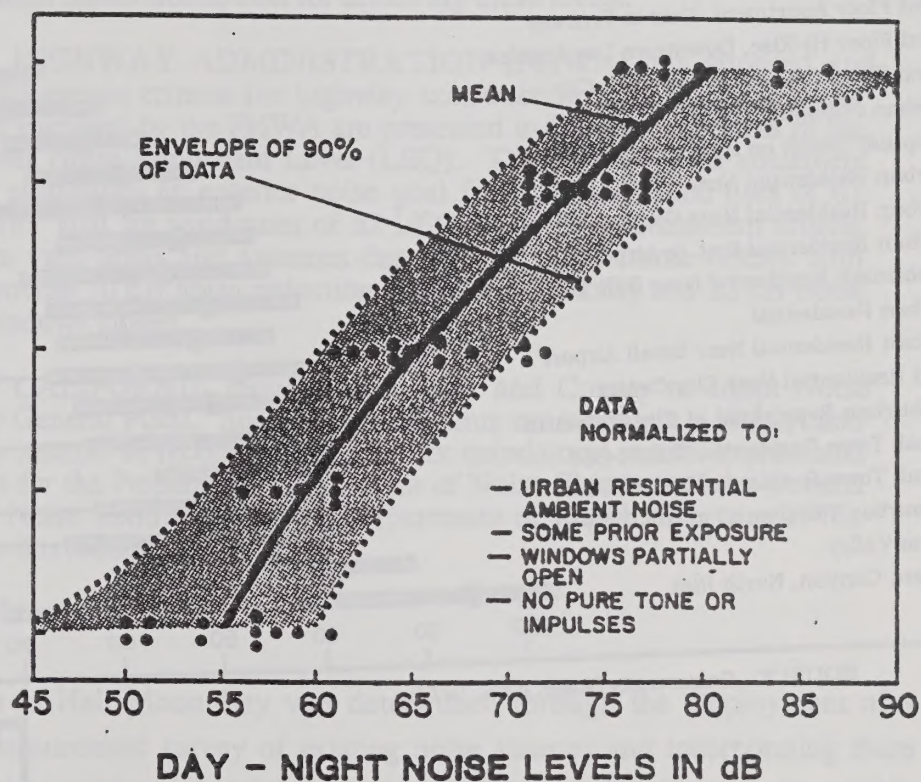
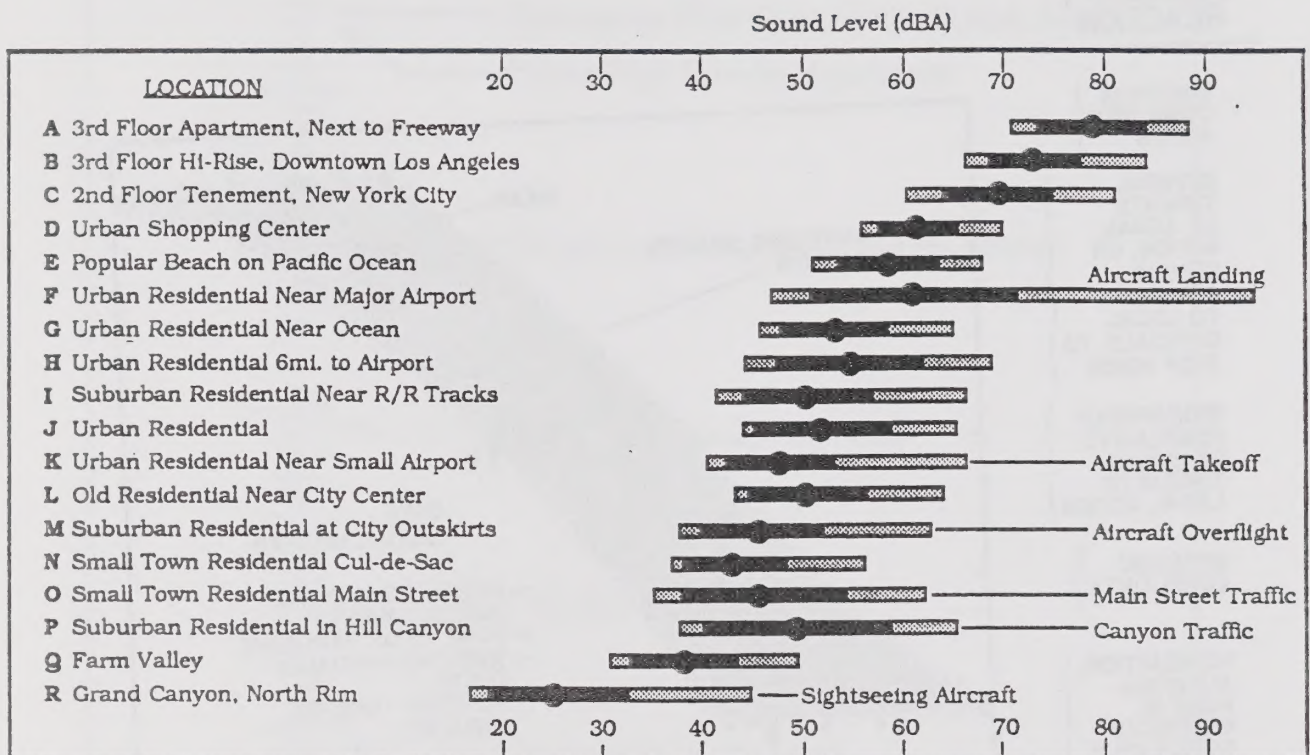


Exhibit 4

Community Reaction Surveys



SOURCE: Community Noise, EPA, 1971

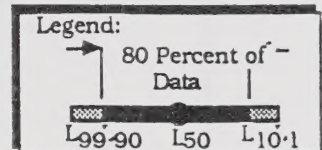


Exhibit 5

Daytime Outdoor Noise Levels

American National Standards Institute and the State of California. These guidelines, presented in the following paragraphs, are all based upon cumulative noise criteria such as LEQ, LDN or CNEL.

The ENVIRONMENTAL PROTECTION AGENCY published in March 1974 a very important document entitled "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety" (EPA 550/9-74-004). Exhibit 6 presents a table of land uses and requisite noise levels. In this table, 55 LDN is described as the requisite level with an adequate margin of safety for areas with outdoor uses, this includes residences, and recreational areas. The EPA "levels document" does not constitute a standard, specification or regulation, but identifies safe levels of environmental noise exposure without consideration for economic cost for achieving these levels.

The FEDERAL HIGHWAY ADMINISTRATION (FHWA) has adopted and published noise abatement criteria for highway construction projects. The noise abatement criteria specified by the FHWA are presented in Exhibit 7 in terms of the maximum one hour Noise Equivalent Level (LEQ). The FHWA noise abatement criteria basically establishes an exterior noise goal for residential land uses of 67 LEQ and an interior goal for residences of 52 LEQ. The noise abatement criteria applies to private yard areas and assumes that typical wood frame homes with windows open provide 10 dB noise reduction (outdoor to indoor) and 20 dB noise reduction with windows closed.

The STATE OF CALIFORNIA requires each City and County to adopt Noise Elements of their General Plans. Such Noise Elements must contain a Noise/Land Use compatibility matrix. A recommended (but not mandatory) matrix is presented in the "Guidelines for the Preparation and Content of Noise Elements of the General Plan," (Office of Noise Control, California Department of Health, February 1976). Exhibit 8 presents this recommended matrix.

2.2.2 Methods of Measurement

The noise environment in Half Moon Bay was determined through the employment of a comprehensive noise measurement survey of existing noise sources and incorporating these results into computer noise models to model the noise environment (it is, of course, impossible to measure future noise levels so we must rely on computer noise models for future noise estimates). The noise environment is commonly presented graphically in terms of lines of equal noise levels, or noise contours. The following paragraphs detail the methodology used in the measurement survey and computer modeling of these results into noise contours.

Measurement Procedure. Ten sites were selected for measurement of the noise environment in Half Moon Bay. Discussions with City staff and identification of major noise

	Measure	Indoor Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects (b)	Outdoor Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects (b)
Residential with Outside Space and Farm Residences	Ldn Leq(24)	45 70		45	55 70		55
Residential with No Outside Space	Ldn Leq(24)	45 70		45			
Commercial	Leq(24)	(a)	70	70(c)	(a)	70	70(c)
Inside Transportation	Leq(24)	(a)	70	(a)			
Industrial	Leq(24)(d)	(a)	70	70(c)	(a)	70	70(c)
Hospitals	Ldn Leq(24)	45 70		45	55 70		55
Educational	Ldn Leq(24)	45 70		45	55 70		55
Recreational Areas	Leq(24)	(a)	70	70(c)	(a)	70	70(c)
Farm Land and General Unpopulated Land	Leq(24)				(a)	70	70(c)

Code:

- Since different types of activities appear to be associated with different levels, identification of a maximum level for activity interference may be difficult except in those circumstances where speech communication is a critical activity.
- Based on lowest level.
- Based only on hearing loss.
- An Leq(8) of 75 dB may be identified in these situations so long as the exposure over the remaining 16 hours per day is low enough to result in a negligible contribution to the 24-hour average, i.e., no greater than an Leq of 6 dB.

Note: Explanation of identified level for hearing loss: The exposure period which results in hearing loss at the identified level is a period of 40 years.

* Refers to energy rather than arithmetic averages.

SOURCE : EPA

Exhibit 6

Environmental Protection Agency Guidelines

ACTIVITY CATEGORY	DESIGN NOISE LEVEL - LEQ	DESCRIPTION OF ACTIVITY CATEGORY
A	57 (Exterior)	Tracts of land in which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of open spaces, or historic districts which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas and parks which are not included in category A and residences, motels, hotels, public meeting rooms, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Category A or B above.
D	-	For requirements of undeveloped lands see FHWA PPM 773.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Exhibit 7

FHWA Noise Abatement Criteria

Land Use Category	Community Noise Exposure Ldn or CNEL, dB					
	55	60	65	70	75	80
Residential - Low Density Single Family, Duplex, Mobile Homes						
Residential - Multiple Family						
Transient Lodging - Motels, Hotels						
Schools, Libraries, Churches Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheatres						
Sports Arena, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables Water Recreation, Cemeteries						
Office Buildings, Business Commercial and Residential						
Industrial, Manufacturing Utilities Agriculture						

Interpretation

Normally Acceptable

Specified Land Use is Satisfactory, Based Upon the Assumption that Any Buildings Involved are of Normal Conventional Construction, Without Any Special Noise Insulation Requirements.

Conditionally Acceptable

New Construction or Development Should be Undertaken Only After a Detailed Analysis of the Noise Reduction Requirement is Made and Needed Noise Insulation Features Included in the Design. Conventional Construction, but with Closed Windows and Fresh Air Supply Systems or Air Conditioning, Will Normally Suffice.

Normally Unacceptable

New Construction or Development Should Generally be Discouraged. If New Construction or Development Does Proceed, a Detailed Analysis of the Noise Reduction Requirements Must be Made and Needed Noise Insulation Features Included in the Design.

Clearly Unacceptable

New Construction or Development Should Generally not be Undertaken.

Exhibit 8

California Land Use Compatibility Studies

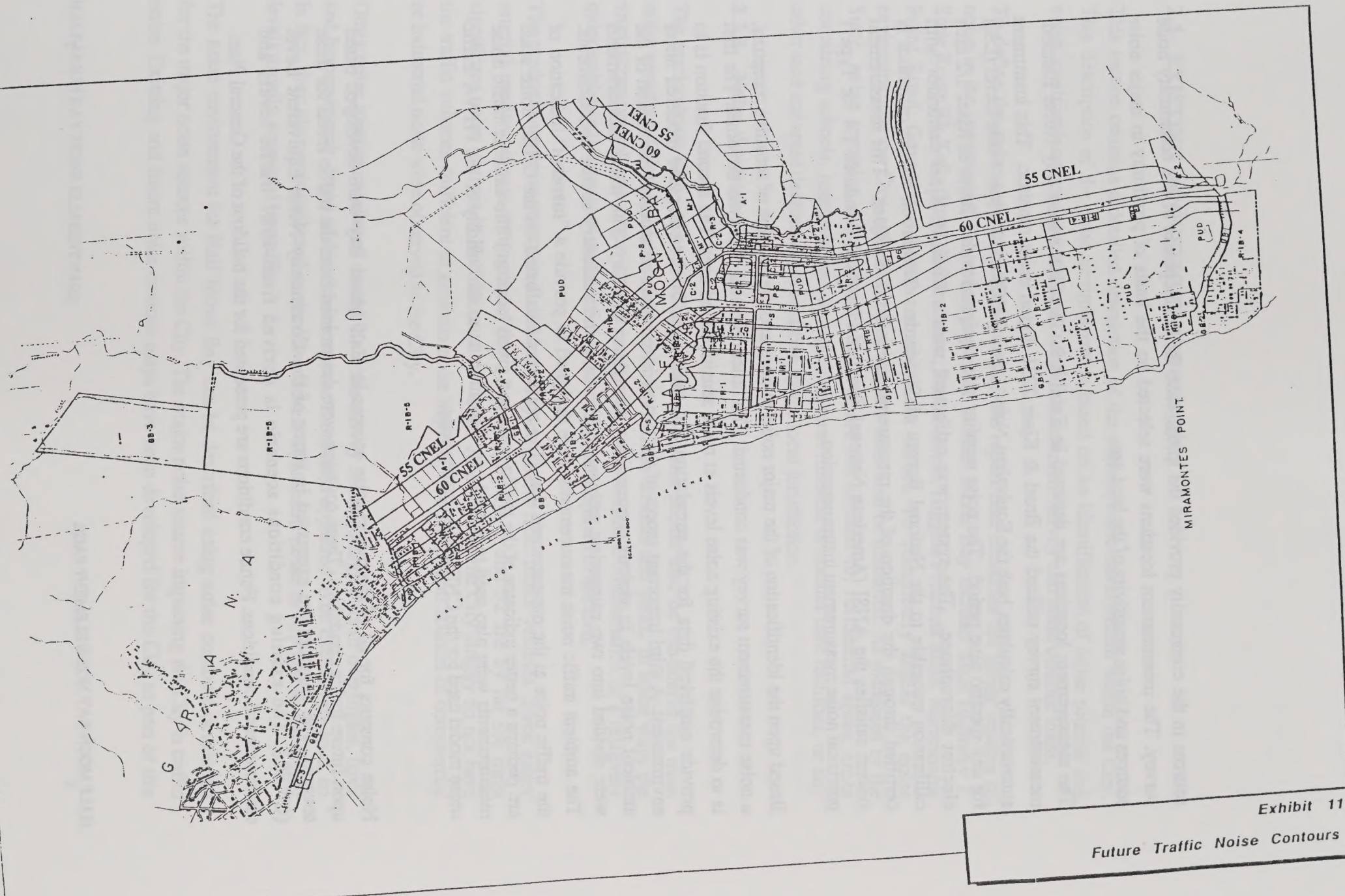




MESTRE GREVE ASSOCIATES

Exhibit 10

Existing Traffic Noise Contours



sources in the community provided the initial base for development of the community noise survey. The measurement locations were selected on the basis of proximity to major noise sources and noise sensitivity of the land use.

The measurement locations are depicted in Exhibit 9. The Half Moon Bay Noise Element measurement survey utilized the Bruel & Kjaer 2231 digital noise monitor. This instrument automatically calculates both the Equivalent Noise Level (LEQ) and Percent Noise Level (L%) for any specific time period. The noise monitor was equipped with a Bruel & Kjaer 1/2 inch electret microphone. The system was calibrated with a Bruel & Kjaer calibrator with calibration traceable to the National Bureau of Standards. Calibration for the calibrator is certified through the duration of the measurements by Bruel & Kjaer. This measurement system satisfies the ANSI (American National Standards Institute) Standards 1.4 for Type 1 precision noise measurement instrumentation.

Based upon the identification of the major noise sources and the location of sensitive receptors, a noise measurement survey was conducted. The function of the survey is threefold. The first is to determine the existing noise levels at noise sensitive land uses. The second function is to provide empirical data for the correlation and calibration of the computer modeled noise environment. A third important aspect of the survey is to obtain an accurate description of the ambient noise levels in various communities throughout the City. The noise measurements were divided into two categories; ambient traffic noise and stationary source measurements. The ambient traffic noise measurements were designed to provide a "snapshot" indication of the traffic noise at the measurement site. (The noise contours based on the CNEL noise scale are perhaps a better indicator of the traffic noise at a given location.) The ambient traffic noise measurements were also used to provide an indication as to the validity of the FHWA traffic noise model used for the CNEL noise projections.

Noise contours for all of the major noise sources in Half Moon Bay were developed based upon future traffic conditions. These contours were determined from the traffic levels for these sources. The contours are expressed in terms of the Community Noise Equivalent Level (CNEL). The existing conditions scenario is derived from 1987 traffic levels and environmental conditions. Future conditions are presented for the buildout of the General Plan.

2.3 EXISTING ACOUSTIC ENVIRONMENT

This section contains a detailed description of the current noise environment within the City. This description of the noise environment is based on an identification of noise sources and noise sensitive land uses, a community noise measurement survey and noise contour maps.

To define the noise exposure, this section of the report first identifies the major sources of noise in the community. The sources of noise in Half Moon Bay include: State Highway 1, State Route 92, Kelly Street, Filbert Street, Poplar Street, Higgins Pruisima Road, Miramontes Point Road, Grandview Boulevard and Main Street. To completely assess the noise environment in the City, noise sensitive receptors must also be identified. As mandated by the State, noise sensitive receptors include, but are not limited to, residential areas, areas containing schools, hospitals, rest homes, long-term medical or mental care facilities, or any other land use areas deemed noise sensitive by the local jurisdiction.

2.3.1 Noise Sources and Levels

The predominant land use in the City is residential, and should also be considered the most noise sensitive. Other noise sensitive land uses include schools and parks. In some ways the tourist/commercial area might also be considered noise sensitive. Maintenance of a relatively quiet ambience is important to maintaining the overall atmosphere of the area.

The predominant noise source in Half Moon Bay originates from motor vehicles. Some major arterial roadways pass through the City. State Highways 1 and 92 are by far the most significant noise sources in Half Moon Bay. Other roadways in the City simply do not have the traffic volumes sufficient to generate noise impacts. No significant sources of commercial or industrial noise were observed in the City.

Other noise sources monitored during the noise survey included high aircraft overflights, birds and human speech. None of these noise sources monitored appeared to be excessively loud, and in fact, they always contributed to the lower levels of ambient noise as opposed to the higher levels usually generated by traffic.

The noise environment for Half Moon Bay can be described using noise contours developed for the major noise sources within the City. The major noise source impacting the City is traffic noise. Existing and future noise contour maps have been developed for the City as part of this

noise element.

The traffic noise contours for existing conditions are presented in Exhibit 10. (This map is available for review at the City at 1" = 800' scale.) The noise contours in a tabular format are presented in Table 3. The 55, and 60 CNEL contour levels are shown on the map. These traffic noise levels were computed using the Highway Noise Model published by the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December 1978). The FHWA Model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the LEQ noise level. A computer code has been written which computes equivalent noise levels for each of the time periods used in CNEL. Weighting these noise levels and summing them results in the CNEL for the traffic projections used. The traffic data used to project these noise levels are derived from the built-out projections in the City's Local Coastal Program, Land Use Plan. The traffic mixes and time distributions for Highway 1, Route 92 and the arterials are presented in Tables 1 and 2. The traffic mix data for the arterials are based on measurements for roadways in Southern California and are considered typical for arterials in this area.

Table 1

TRAFFIC DISTRIBUTION PER TIME OF DAY
IN PERCENT OF ADT FOR HIGHWAY 1 AND ROUTE 92

VEHICLE TYPE	PERCENT OF ADT		
	DAY	EVENING	NIGHT
Automobile	73.55	12.26	8.49
Medium Truck	2.42	0.40	0.28
Heavy Truck	2.03	0.34	0.23

Table 2

TRAFFIC DISTRIBUTION PER TIME OF DAY
IN PERCENT OF ADT FOR ARTERIALS

VEHICLE TYPE	PERCENT OF ADT		
	DAY	EVENING	NIGHT
Automobile	75.51	12.57	9.34
Medium Truck	1.56	0.09	0.19
Heavy Truck	0.64	0.02	0.08

It appears that 60 CNEL for outdoor living areas and 40 CNEL for indoor areas may be a very reasonable noise standard for new developments, and a reasonable long term goal for existing residential areas. Most cities have adopted 65 CNEL and 45 CNEL noise standards for outdoor and indoor living areas, respectively. The 60 CNEL/40 CNEL standard will provide a better noise environment that many residents in other communities have desired, but unlike most other communities it is readily achievable in the City of Half Moon Bay. The noise contour map indicates that currently and in the future 60 CNEL is only exceeded significantly along Highway 1 and 92. The remaining portions of the City experience noise levels generally of 55 CNEL or less. Adoption of the lower noise standards would be a statement by the City that they view the current quiet in the City as very important and something that should be preserved and carried into new developments.

TABLE 3
EXISTING (1990) TRAFFIC NOISE CONTOURS

Roadway	ADT	Distance to CNEL Contour (feet)				
		Speed 70	CNEL 65	CNEL 60	CNEL 55	
(ROUTE 1)						
South of Miramontes	8,300	55	42	90	195	419
(ROUTE 1) - Miramontes Point Road to Junction Route 92						
North of Miramontes	19,161	55	73	158	340	732
S. of Higgins Purisima	19,307	55	74	159	342	736
N. of Higgins Purisima	17,416	55	69	148	319	687
South of Poplar Street	17,135	55	68	146	315	679
North of Poplar Street	18,990	55	73	157	338	728
South of Filbert	18,294	55	71	153	329	710
North of Filbert	21,346	55	79	169	365	787
South of Kelly	21,138	55	78	168	363	782
North of Kelly	27,179	55	92	199	429	924
South of Hwy 92	27,033	55	92	198	427	921
(ROUTE 1) - Junction Route 92 to Frenchmans Creek Road						
North of Hwy 92	15,552	55	64	137	296	637
South of Main Street	16,802	55	67	144	311	671
North of Main Street	24,099	55	85	184	396	853
South of Grandview	23,487	55	84	181	389	838
North of Grandview	23,560	55	84	181	390	840
HIGHWAY 92						
West of Highway 1	4,115	55	6	13	29	62
East of Highway 1	16,200	55	15	33	72	155
West of Main	15,458	55	15	32	70	150
East of Main	21,545	55	19	40	87	187
KELLY STREET						
West of Highway 1	4,844	40	15	32	69	149
East of Highway 1	8,828	40	22	48	103	223
FILBERT STREET						
West of Highway 1	2,757	40	10	22	48	103
East of Highway 1	2,116	40	9	19	40	86
POPLAR STREET						
West of Highway 1	1,753	40	8	16	35	76
East of Highway 1	1,725	40	8	16	35	75

TABLE 3 (Continued)
EXISTING (1990) TRAFFIC NOISE CONTOURS

Roadway	ADT	Distance to CNEL Contour (feet)				
		Speed 70	CNEL 65	CNEL 60	CNEL 55	
HIGGINS PRUISIMA ROAD						
East of Highway 1	3,242	40	11	25	53	114
East of Main	621	40	4	8	18	38
MIRAMONTES POINT ROAD						
West of Highway 1	1,254	40	6	13	28	61
East of Highway 1	313	40	2	5	11	24
GRANDVIEW BOULEVARD						
East of Highway 1	835	40	5	10	21	46
MAIN STREET						
West of Highway 1	6,304	40	18	38	83	178
East of Highway 1	9,603	40	24	51	109	236
North of Highway 92	7,763	40	20	44	95	205
South of Highway 92	6,942	40	19	41	88	190
N. of Higgins Purisima	3,118	40	11	24	52	111
S. of Higgins Purisima	3,269	40	11	25	53	115

ADT - Average Daily Traffic.

Speed - Speed is in miles per hour.

2.3.2 Noise Sensitive Land Uses

The most noise sensitive land use in Half Moon Bay is residential development. Residential development is spread throughout the City. It is considered especially noise sensitive because (1) considerable time is spent by individuals at home, (2) significant activities occur outdoors, and (3) sleep disturbance is most likely to occur in a residential area. Additionally, the City of Half Moon Bay has a number of public and private educational facilities, churches, and parks that are considered noise sensitive. These facilities are generally located in the center of the City. Some school facilities border Highway 1.

The tourist recreation/commercial area, sometimes referred to as the Spanish Town area, may in some ways also be considered noise sensitive. Typical commercial areas are considered relatively insensitive to noise. However, the tourist recreation/commercial area in downtown Half Moon Bay has attempted to establish a peaceful, "old California" atmosphere. Tourists spend a considerable amount of time outdoors either window shopping or eating at the outdoor restaurant areas. Therefore, this area is more sensitive to noise than other commercial areas.

The determination of the major noise sources and the identification of noise sensitive receptors provide the basis of developing a community noise survey. The noise measurement survey was conducted at locations which reflect the noise levels at these facilities.

Noise contours represent lines of equal noise exposure, just as the contour lines on a topographic map are lines of equal elevation. The contours shown on the maps are the 60, and 55 CNEL noise level for the traffic noise contours. The noise contours presented should be used as a guide for land use planning. The 55 CNEL contour defines the Noise Referral Zone. This is the noise level for which noise considerations should be included when making land use policy decisions. The 60 CNEL contour describes the areas for which new noise sensitive developments will be permitted only if appropriate mitigation measures are included such that the standards contained in this Element are achieved.

The contours presented in this report are a graphic representation of the noise environment. Topography and intervening buildings or barriers have a very complex effect on the propagation of noise. This topographic effect is not included in these contours.

2.4 FUTURE ACOUSTIC ENVIRONMENT

2.4.1 Noise Sources and Levels

Future traffic noise levels have been computed using the FHWA Highway Traffic Noise Prediction Model and projected traffic volumes presented in the circulation element. Table 4 presents the noise contour data for the case with the southwest bypass. Exhibit 11 shows the traffic noise contours along the City's principal highways that are projected to occur following buildout of the proposed general plan.

TABLE 4 - FUTURE TRAFFIC NOISE CONTOURS
WITH CONNECTION BETWEEN FOOTHILL AND GRANDVIEW

Roadway	ADT	Distance to CNEL Contour (feet)				
		Speed 70	CNEL 65	CNEL 60	CNEL 55	CNEL
(ROUTE 1)						
South of Miramontes	11,361	55	52	111	240	517
(ROUTE 1) - Miramontes Point Road to Junction Route 92						
North of Miramontes	29,401	55	97	210	452	974
S. of Higgins Purisima	29,547	55	98	211	454	977
N. of Higgins Purisima	27,192	55	92	199	429	924
South of Poplar Street	27,631	55	93	201	434	934
North of Poplar Street	29,999	55	99	213	458	987
South of Filbert	28,131	55	95	204	439	946
North of Filbert	31,695	55	102	221	475	1,024
South of Kelly	31,756	55	103	221	476	1,025
North of Kelly	38,481	55	117	251	541	1,165
South of Hwy 92	38,993	55	118	253	546	1,176
(ROUTE 1) - Junction Route 92 to Frenchmans Creek Road						
North of Hwy 92	23,570	55	84	181	390	840
South of Main Street	24,774	55	87	187	403	869
North of Main Street	36,349	55	112	242	521	1,122
South of Grandview	35,801	55	111	239	515	1,111
North of Grandview	36,412	55	112	242	521	1,123
HIGHWAY 92						
West of Highway 1	5,715	55	33	70	152	327
East of Highway 1	25,892	55	89	193	415	895
West of Main	24,958	55	87	188	405	873
East of Main	37,489	55	115	247	532	1,145
West of Foothill	38,627	55	117	252	542	1,168
East of Foothill	40,941	55	121	262	564	1,214
KELLY STREET						
West of Highway 1	6,746	40	19	40	86	186
East of Highway 1	9,965	40	24	52	112	242
FILBERT STREET						
West of Highway 1	3,013	40	11	23	51	109
East of Highway 1	2,577	40	10	21	46	98
POPLAR STREET						
West of Highway 1	2,033	40	8	18	39	84
East of Highway 1	2,230	40	9	19	41	89

TABLE 4 (Continued) - FUTURE TRAFFIC NOISE CONTOURS
WITH CONNECTION BETWEEN FOOTHILL AND GRANDVIEW

Roadway	ADT	Speed	Distance to CNEL Contour (feet)			
			70 CNEL	65 CNEL	60 CNEL	55 CNEL
HIGGINS PRUISIMA ROAD						
East of Highway 1	3,766	40	13	27	59	126
East of Main	621	40	4	8	18	38
MIRAMONTES POINT ROAD						
West of Highway 1	7,046	40	19	41	89	192
East of Highway 1	1,833	40	8	17	36	78
GRANDVIEW BOULEVARD						
East of Highway 1	1,822	40	8	17	36	78
MAIN STREET						
West of Highway 1	7,515	40	20	43	93	200
East of Highway 1	13,895	40	30	65	140	302
North of Highway 92	12,064	40	27	59	127	274
South of Highway 92	10,118	40	24	53	113	244
N. of Higgins Purisima	3,476	40	12	26	56	120
S. of Higgins Purisima	3,628	40	12	27	57	123
FOOTHILL BOULEVARD						
North of Highway 92	4,846	40	15	32	69	149
South of Highway 92	6,777	40	19	40	87	187

Based on current and future traffic levels the only area of the City that experiences noise levels in excess of 60 CNEL is along Highway 1. Some of the land uses along this roadway are commercial uses which have a higher tolerance to noise. However, there are a substantial number of residential areas along Highway 1 and 92 and some school sites. Therefore, future planning for the City should be directed at reducing noise levels along Highway 1, and 92. Limiting the future siting of noise sensitive land uses along these highways, requiring mitigation for new developments along these roadways, and taking advantage of any Caltrans funding to remediate problems are examples of potential solutions.

The increases in roadway noise for future years was determined. The results of the analysis are presented in Table 5.

TABLE 5
CHANGE IN NOISE LEVEL OVER EXISTING CASE

Roadway	Change in CNEL Noise Level (dBA) Proposed GP with Foothill Connection
(ROUTE 1)	
South of Miramontes	1.4
(ROUTE 1) - Miramontes Point Road to Junction Route 92	
North of Miramontes	1.9
South of Higgins Purisima	1.8
North of Higgins Purisima	1.9
South of Poplar Street	2.1
North of Poplar Street	2.0
South of Filbert	1.9
North of Filbert	1.7
South of Kelly	1.8
North of Kelly	1.5
South of Hwy 92	1.6
(ROUTE 1) - Junction Route 92 to Frenchmans Creek Road	
North of Hwy 92	1.8
South of Main Street	1.7
North of Main Street	1.8
South of Grandview	1.8
North of Grandview	1.9
HIGHWAY 92	
West of Highway 1	1.4
East of Highway 1	2.0
West of Main	2.1
East of Main	2.4
West of Foothill	*
East of Foothill	*
KELLY STREET	
West of Highway 1	1.4
East of Highway 1	0.5
FILBERT STREET	
West of Highway 1	0.4
East of Highway 1	0.9

TABLE 5 (Continued)
CHANGE IN NOISE LEVEL OVER EXISTING CASE

Roadway	Change in CNEL Noise Level (dBA) Proposed GP with Foothill Connection
POPLAR STREET	
West of Highway 1	0.6
East of Highway 1	1.1
HIGGINS PRUISIMA ROAD	
East of Highway 1	0.6
East of Main	0.0
MIRAMONTES POINT ROAD	
West of Highway 1	7.5
East of Highway 1	7.7
GRANDVIEW BOULEVARD	
East of Highway 1	3.4
MAIN STREET	
West of Highway 1	0.8
East of Highway 1	1.6
North of Highway 92	1.9
South of Highway 92	1.6
North of Higgins Purisima Rd.	0.5
South of Higgins Purisima Rd.	0.4
FOOTHILL BOULEVARD	
North of Highway 92	*
South of Highway 92	*

In community noise assessment changes, noise levels greater than 3 dBA are often identified as significant, while changes less than 1 dBA will not be discernible to local residents. In the range of 1 to 3 dBA residents who are very sensitive to noise may perceive a slight change. No scientific evidence is available to support the use of 3 dBA as the significance threshold. In laboratory testing situations humans are able to detect noise level changes of slightly less than 1 dBA. However, in a community noise situation the noise exposure is over a long time period, and changes in noise levels occur over years, rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dBA, and 3 dBA appears to be appropriate

for most people.

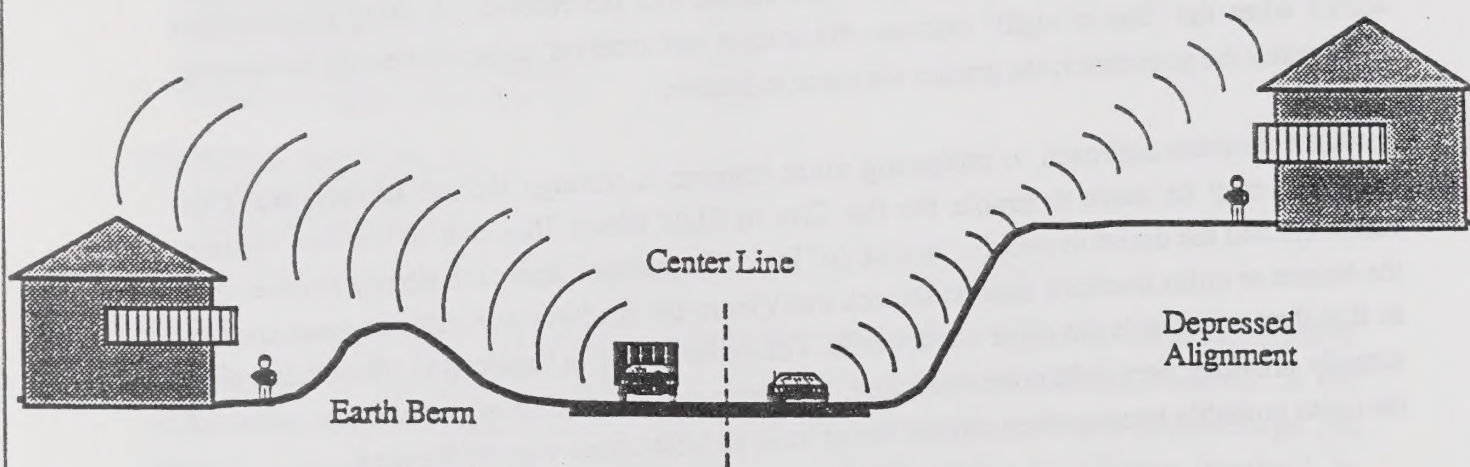
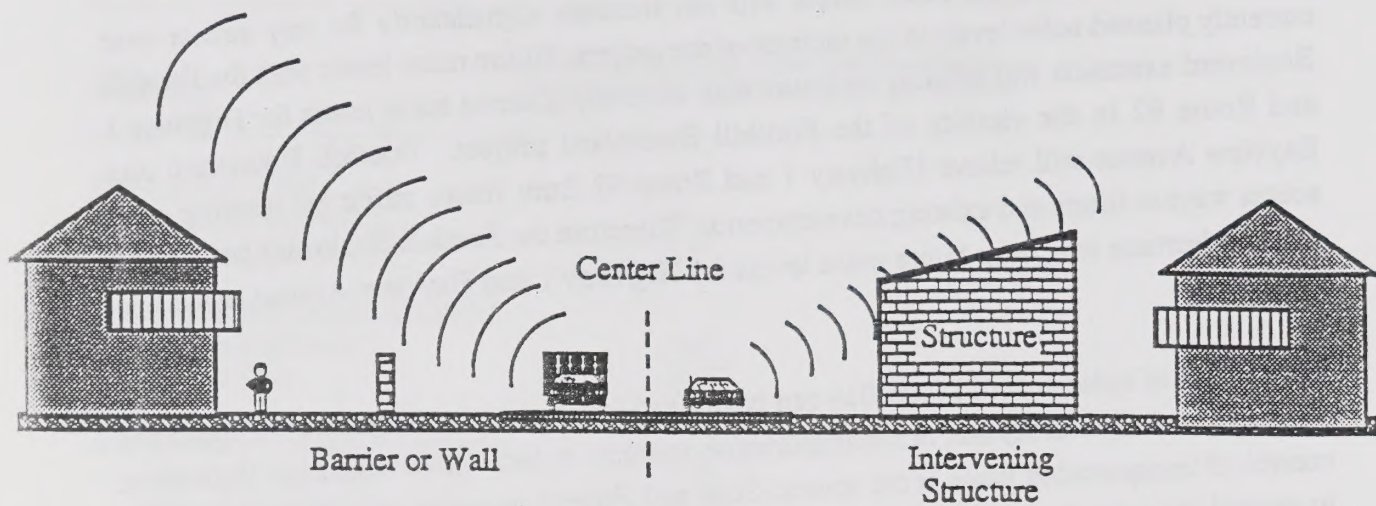
The data indicate that the noise levels will not increase significantly for any streets over currently planned noise levels in the vicinity of the project. Future noise levels with the Foothill Boulevard extension will actually be lower than currently planned noise levels for Highway 1 and Route 92 in the vicinity of the Foothill Boulevard project. Foothill Boulevard and Bayview Avenue will relieve Highway 1 and Route 92 from future traffic by granting other access ways to future and existing developments. Therefore the Foothill Boulevard project will slightly decrease long term future noise levels for Highway 1 and Bayview Avenue around the project.

The sources of noise in Half Moon Bay can be divided into two basic categories, transportation sources (primarily traffic) and non-transportation sources. A local government has little direct control of transportation noise at the source. State and Federal agencies have the responsibility to control the noise from the source, such as vehicle noise emission levels. The most effective method the City has to mitigate transportation noise is through reducing the impact of the noise onto the community (i.e. noise barriers and site design review). Mitigation through the design and construction of a noise barrier (wall, berm, or combination wall/berm) is the most common way of alleviating traffic noise impacts (Exhibit 12). The effect of a noise barrier is critically dependent on the geometry between the noise source and the receiver. A noise barrier effect occurs when the "line of sight" between the source and receiver is penetrated by the barrier. The greater the penetration the greater the noise reduction.

Another common approach to mitigating noise impacts is through the use of setbacks. This approach may be more desirable for the City of Half Moon Bay due to its low volume roadways and the desire to avoid a "walled in" look. The setback approach simply requires that the homes or noise sensitive uses be setback away from the roadway at a distance great enough so that they are outside the noise impact zone. The setback area is landscaped. The landscaping actually provides very little noise reduction, however, residents seem to become less aware of the noise probably because they can not see or have an obstructed view of the road.

2.4.2 Noise/Land Use Compatibility

Noise concerns should be incorporated into land use planning to reduce future noise and land use incompatibilities. This is achieved by establishing standards and criteria that specify acceptable limits of noise for various land uses throughout the City. These criteria are designed



to integrate noise considerations into land use planning to prevent noise/land use conflicts. Exhibit 8, the California Noise Compatibility Guidelines, was presented earlier, and is the most appropriate to evaluate projects with the General Plan L.C.P. and zoning levels. These criteria are the basis for the development of specific Noise Standards. The proposed standards, presented in Exhibit 13, represent (if adopted) City policies related to land uses and acceptable noise levels. These tables are the primary tools which allow the City to ensure integrated planning for compatibility between land uses and outdoor noise. The most effective method to control community noise impacts from non-transportation noise sources is through application of a Community Noise Ordinance.

3.0 GOALS, OBJECTIVES, AND POLICIES

The following are statements of the goals of the City of Half Moon Bay for the control of community noise.

*TO PROTECT PUBLIC HEALTH AND WELFARE BY ELIMINATING
EXISTING NOISE PROBLEMS AND BY PREVENTING SIGNIFICANT
DEGRADATION OF THE FUTURE ACOUSTIC ENVIRONMENT.*

3.1 POLICIES

In order to achieve the goals of the Noise Element the following policies should be considered by the City of Half Moon Bay:

Objective 1.0

Incorporate noise considerations into land use planning decisions.

Policy 1.a Establish acceptable limits of noise for various land uses throughout the community. The City adopts the noise standards presented in Exhibit 13 which identify interior and exterior noise standards in relation to specific land uses; particularly residential areas, schools, hospitals, open space preserves, and parks. The standards would specify the maximum noise levels allowable for new developments impacted by transportation noise sources operating on public or quasi-public property. (Sources on private property would be subject to the noise ordinance requirements, as called out in Policy 3.a.)

Policy 1.b The City shall require a noise impact evaluation by a qualified acoustical engineer (i.e., a Registered Professional Engineer in the State of California with a minimum of three years experience in acoustics) for all new residential subdivisions and for all new commercial developments on any site within 300 feet of any residential district or Planned Unit Development District where residential uses are proposed.

LAND USE CATEGORIES		ENERGY AVERAGE CNEL	
CATEGORIES	USES	INTERIOR (1)	EXTERIOR (2)
RESIDENTIAL	Single family, Duplex	40	60
	Multiple Family	40	—
	Mobile Homes	—	60(4)
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Hotel, Motel, Transient Lodging	45	—
	Commercial Retail, Bank Restaurant	45	—
	Office Building, Research and Development, Professional Offices, City Office Building	45	—
	Amphitheatre, Concert Hall Auditorium, Meeting Hall	45	—
	Gymnasium (Multipurpose)	50	—
	Sports Club	55	—
	Manufacturing, Warehousing Wholesale, Utilities	65	—
	Movie Theatres	45	—
INSTITUTIONAL	Hospital, Schools classrooms	45	65
	Church, Library	45	—
OPEN SPACE	Parks	—	—

INTERPRETATION

1. Indoor environment excluding: Bathrooms, toilets, closets, corridors.
2. Outdoor environment limited to:
Private, usable yard of single family.
Mobile home park.
Hospital patio.
3. Noise level requirement with closed windows. Mechanical ventilating system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of UCB.
4. Exterior noise level should be such that interior noise level will not exceed 45 CNEL.
5. Except those areas affected by aircraft noise.

Noise from an intervening highway shall be considered as a part of the noise evaluation. Should mitigation be necessary, specific proposals shall be addressed by the Architectural Review Committee, Planning Commission, or both.

Policy 1.c The City shall not approve projects that do not comply with the adopted standards.

Policy 1.d The California Department of Health Services recommends that noise elements be updated every 5 years.

Policy 1.e The City shall minimize potential transportation noise through proper design of street circulation, coordination of routing, and other traffic control measures.

Objective 2.0

Establish measures to reduce noise impacts from traffic noise sources.

Policy 2.a The City shall require, for new development projects that are impacted by noise or cannot meet the standards specified in the Noise Element, the construction of barriers to mitigate sound emissions where necessary or where feasible. Action Items 1, 4, 5 and 6 provide specific measures for meeting this objective.

Policy 2.b The City shall require, where necessary and feasible, the inclusion of noise mitigation measures in the design of new roadway projects in Half Moon Bay. The City shall request from Caltrans a noise study for any portions of Highway 1 or 92 that Caltrans proposed to modify, (e.g. widen to 4 lanes). Appropriate mitigation measures should be included in any final project plans.

Policy 2.c The City shall ensure the effective enforcement of City, State and Federal noise levels by all appropriate City divisions.

Policy 2.d The City shall consider the special nature of the Spanish Town commercial area in its land use deliberations. Efforts to maintain low levels of noise in this area should be continued. Continued use of roadway configurations that maintain a slow speed through the area will be most effective in maintaining low levels of noise.

Objective 3.0

Establish measures to control non-transportation noise impacts.

Policy 3.a The City shall establish a new Community Noise Ordinance to mitigate noise conflicts from non transportation noise sources. The City of Half Moon Bay does not currently have a problem with non-

transportation sources of noise (e.g., industrial noise sources). Therefore, it does not seem prudent to adopt a Noise Ordinance aimed at the sources. However, in-fill construction is occurring throughout the City, and this can impact existing residential areas. Therefore, it is proposed to limit construction activities that occur within 500 feet of existing residences to Monday through Friday from 7 A.M. to 7 P.M. only. Construction also should not be allowed on federal holidays.

4.0 THE PLAN FOR CONTROL AND MANAGEMENT OF NOISE

In order to achieve the goals and objectives of the Noise Element, an effective implementation program developed within the constraints of the City's financial and staffing capabilities is necessary. The underlying purpose is to reduce the number of people exposed to excessive noise and to minimize the future effect of noise in the City. The following are the actions that the City should consider implementing to control the impacts of noise in Half Moon Bay.

Issue 1 - Transportation Noise Control - The most efficient and effective means of controlling noise from transportation systems is reducing noise at the source. However, since the City has little direct control over source noise levels because of State and Federal preemption (i.e. State Motor Vehicle Noise Standards), policies should be focused on reducing the impact of the noise on the community. Cooperative efforts with State and Federal offices are essential.

- Action 1*** Encourage the use of walls and berms, increased building setbacks, or both, in the design of residential or other noise sensitive land uses that are adjacent to major roads, commercial, or industrial areas.
- Action 2*** Provide for continued evaluation of truck movements and routes in the City to provide effective separation from residential or other noise sensitive land uses.
- Action 3*** Request Caltrans provide noise mitigation study as part of any modification to Highway 1 or 92.

Issue 2 - Noise and Land Use Planning Integration. Community noise considerations are to be incorporated into land use planning. These measures are intended to prevent future noise and land-use incompatibilities.

Action 4 Establish standards that specify acceptable limits of noise for various land uses throughout the City. These criteria are designed to fully integrate noise considerations into land use planning to prevent new noise/land use conflicts. Exhibit 8 shows criteria used to assess the compatibility of proposed land uses with the noise environment. These criteria are the bases for the development of specific Noise Standards. These standards, presented in Exhibit 13, define the City policies related to land uses and acceptable noise levels. These tables are the primary tools which allow the City to ensure noise integrated planning for compatibility between land uses and outdoor noise.

Action 5 Incorporate noise reduction features during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses. The noise referral zones identified in Exhibits 10 and 11 (areas exposed to noise levels greater than 60 CNEL) can be used to identify locations of potential conflict. New developments will be permitted only if appropriate mitigation measures are included such that the standards contained in this Element or any adopted ordinance are met.

Action 6 Enforce the State of California requirement that indoor noise levels for residential living spaces not exceed 45 dB LDN/CNEL due to the combined effect of all noise sources. The State of California requires implementation of this standard when the outdoor noise levels exceed 60 dB LDN/CNEL. The Noise Referral Zones (60 CNEL) can be used to determine when this standard should be applied. This standard shall be applied to all new hotels, motels, apartment houses and dwellings other than detached single family dwellings, the City shall commit to meeting an interior noise level standard of 40 dB CNEL.

Issue 3 - Community Noise Control for Non-Transportation Noise Sources. The focus of control of noise from non-transportation sources is the control of construction noise on adjacent residential areas.

Action 7 Amend and adopt a community noise ordinance that restricts construction adjacent to existing residential areas per Policy 3.a.

Technical Appendices

Appendix A - Noise Measurement Results

Appendix B - Glossary

Appendix A

Noise Measurement Results

For Half Moon Bay

Site	Location	Land Use	Date	Start Time	Leq	Lmax	Lmin	L(1)	L(10)	L(50)	L(90)	L(99)
1	Rendondo Beach and Highway 1		3/12/90	01:58	65.1	77.1	*	65.1	77.1	73.3	68.8	*
2	Myrtle St. near Highway 1		3/12/90	02:25	66.5	77.2	48.8	74.3	69.8	64.8	56.8	50.3
3	Highway 1 and Splndrlft		3/12/90	08:30	68.5	80.0	49.1	75.8	71.3	67.3	61.3	53.8
4	Highway 1 and Roosevelt		3/12/90	08:00	70.1	79.6	48.9	75.3	73.3	69.3	62.8	54.8
5	Route 92		3/12/90	05:00	66.8	87.0	54.5	75.8	63.7	62.8	58.3	55.8
6	Highway 92 (Spanish Town)		3/12/90	04:30	67.2	78.4	47.8	75.5	70.0	66.0	56.5	49.5
7	Main Street and Arnold		3/12/90	02:50	60.9	75.3	48.3	71.3	64.8	55.3	50.8	49.3
8	Kelly and Pillancitos		3/12/90	03:50	64.4	83.8	47.1	73.5	68.0	60.0	51.5	48.5
9	Grandview and Pacific		3/12/90	08:50	60.0	73.2	45.6	68.8	63.3	57.8	50.8	46.3
10	Some School (End of Faculty Parking)		3/12/90	09:15	54.6	63.2	42.3	60.8	58.8	52.8	45.3	43.3

LAND USE LEGEND

Res - residential
Com- Commerical

APPENDIX B - GLOSSARY

A-WEIGHTED SOUND LEVEL. The sound pressure level in decibels as measured on a sound level meter using the A-Weighted filter network. The A-Weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgement of loudness.

AMBIENT NOISE LEVEL. The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL). The average equivalent A-Weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7 p.m. to 10 p.m. and after addition of ten (10) decibels to sound levels in the night before 7 a.m. and after 10 p.m.

DAY-NIGHT AVERAGE LEVEL (LDN). The average equivalent A-Weighted sound level during a 24-hour day, obtained after addition of ten (10) decibels to sound levels in the night before 7 a.m. and after 10 p.m.

DECIBEL (dB). A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A). A-weighted sound level (see definition above)

EQUIVALENT SOUND LEVEL (LEQ). The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

FREQUENCY. The number of times per second that a sound pressure signal oscillates about the

prevailing atmosphere pressure. The unit of frequency is the hertz. The abbreviation is Hz.

INTRUSIVE NOISE. That noise which intrudes over and above the ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, and tonal or informational content as well as the prevailing ambient noise level.

L10. The A-Weighted sound level exceeded 10 percent of the sample time. Similarly L50, L90, L99, etc.

NOISE. Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound..."

NOISE ATTENUATION. The ability of a material, substance, or medium to reduce the noise level from one place to another or between one room and another. Noise attenuation is specified in decibels.

NOISE EXPOSURE CONTOURS. Lines drawn around a noise source indicating constant or equal level of noise exposure. CNEL and LDN are typical metrics used.

NOISE REFERRAL ZONES. Such zones are defined as the area within the contour defining a CNEL level of 55 decibels. It is the level at which either State or Federal laws and standards related to land use become important and, in some cases, preempted local laws and regulations. Any proposed noise sensitive development which may be impacted by a total noise environment of 55 dB CNEL or more should be evaluated on a project specific basis.

NOISE SENSITIVE LAND USE. Those specific land uses which have associated indoor and/or outdoor human activities that may be subject to stress and/or significant interference from noise produced by community sound sources. Such human activity typically occurs daily for continuous periods of 24 hours or is of such a nature that noise is significantly disruptive to activities that

occur for short periods. Specifically, noise sensitive land uses include: residences of all types, hospitals, places of worship and schools.

SOUND LEVEL (NOISE LEVEL). The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

SOUND LEVEL METER. An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.



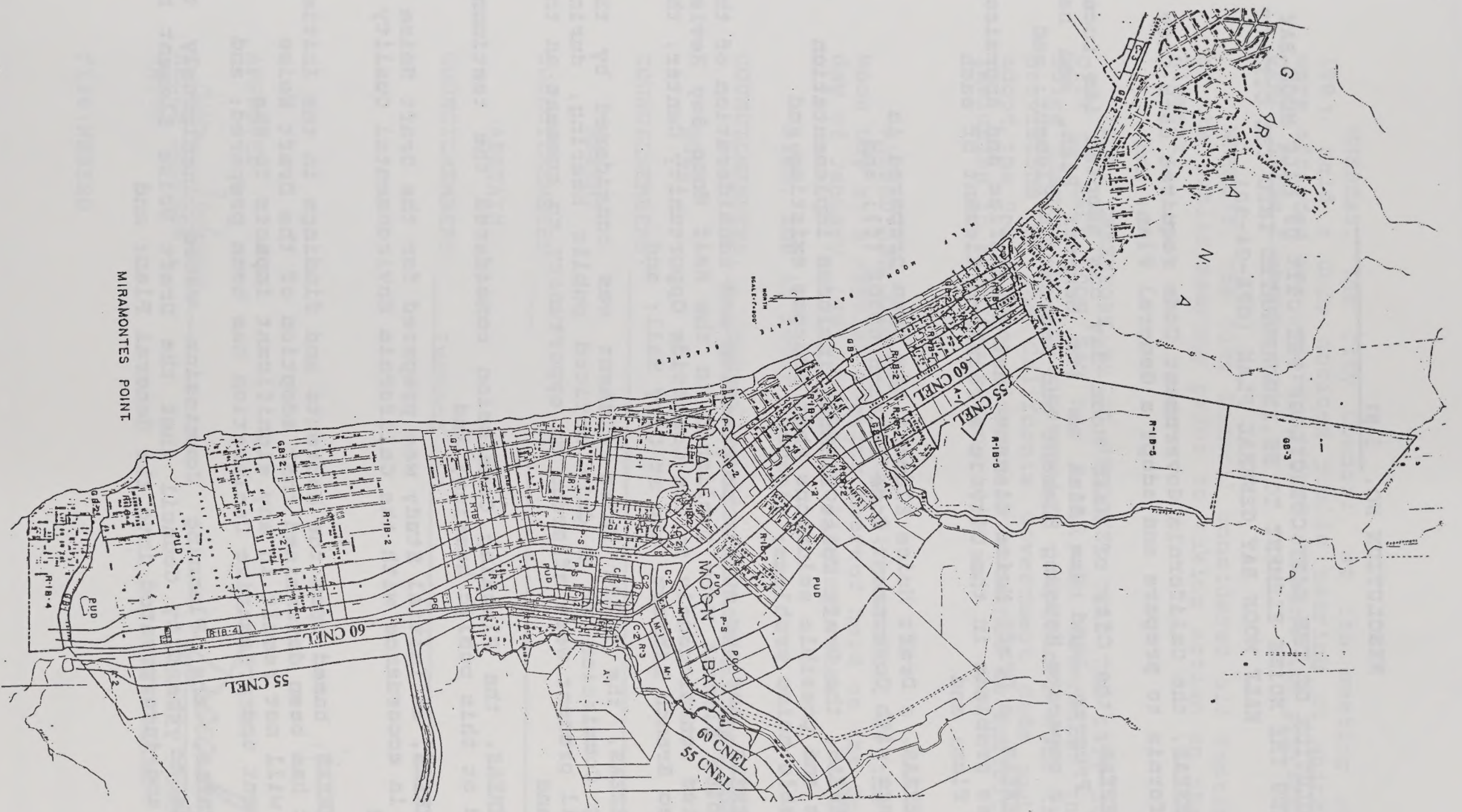
Exhibit 9
Noise Measurement Locations



Exhibit 10

Existing Traffic Noise Contours

MIRAMONTES POINT



RESOLUTION NO. 3-91

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HALF MOON BAY
ADOPTING THE NOISE ELEMENT TO BE INCORPORATED INTO THE CITY OF
HALF MOON BAY GENERAL PLAN (GPA-04-90)

WHEREAS, the California Government Code requires each City
in California to prepare and adopt a General Plan; and

WHEREAS, the City of Half Moon Bay has adopted its Local
Coastal Program Land Use Plan as its General Plan, and has
adopted a separate Housing Element and Recreation Element; and

WHEREAS, a Draft Noise Element that identifies and appraises
the noise problems in the City is a required Element of each
General Plan; and

WHEREAS, a Draft Noise Element has been prepared in
accordance with Government Code Section 65302 (f); and

WHEREAS, the Draft Noise Element includes implementation
measures and possible solutions that address existing and
foreseeable noise problems; and

WHEREAS, notices of the preparation and consideration of the
Draft Noise Element were published in the Half Moon Bay Review
and posted conspicuously in the Coastside Opportunity Center, the
San Mateo Branch Library, and at City Hall; and

WHEREAS, the Draft Noise Element was considered by the
Planning Commission at a duly noticed public hearing, during
which all present were afforded an opportunity to comment on the
Draft; and

WHEREAS, the Planning Commission considered the testimony
received at this public hearing; and

WHEREAS, an Initial Study was prepared for the Draft Noise
Element in accordance with the California Environmental Quality
Act; and

WHEREAS, based upon the contents and findings in the Initial
Study it has been determined that adoption of the Draft Noise
Element will not result in any significant impacts to the
environment and a Negative Declaration has been prepared; and

WHEREAS, the Planning Commission voted unanimously to
recommend to the City Council that the Draft Noise Element be
adopted and incorporated into the General Plan; and

WHEREAS, the City Council, at its meeting of January 2, 1991, held a duly noticed public hearing at which all present were afforded the opportunity to comment and provide input on the Draft Noise Element; and

WHEREAS, the City Council considered all testimony received at the public hearing prior to taking action on the Draft Noise Element.

NOW, THEREFORE BE IT RESOLVED THAT THE CITY COUNCIL OF THE CITY OF HALF MOON BAY has found and determined that the Draft Noise Element is in substantial compliance with the applicable provisions of the California Government Code and does hereby adopt the Draft Noise Element as attached as Exhibit A hereto for inclusion in the City's General Plan.

PASSED AND ADOPTED by the City Council of the City of Half Moon bay at a regular meeting thereof held on the 2nd day of January, 1991, by the following vote:

AYES, and in favor thereof;

COUNCILMEMBERS: Eriksen, Patridge, Patterson & Mayor Bedesem

NOES:

COUNCILMEMBERS: _____

ABSENT:

COUNCILMEMBERS: _____

ABSTAIN:

COUNCILMEMBERS: Iverson

APPROVED:

Helen Bedesem
HELEN BEDESEM
MAYOR

ATTEST:

Dorothy R. Robbins
DOROTHY ROBBINS
CITY CLERK

file:NERESO



Exhibit 9
Noise Measurement Locations





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